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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,394	12/28/2001	Jum Soo Kim	054216-5016	2075

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EXAMINER
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NGUYEN, KHIEM D

ART UNIT	PAPER NUMBER
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2823

DATE MAILED: 03/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/029,394

Applicant(s)

KIM ET AL.

Examiner

Khiem D. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 7-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-11 is/are rejected.
- 7) ☒ Claim(s) 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

The non-final rejection as set forth in paper No. (080404) mailed on August 09<sup>th</sup>, 2004 is withdrawn in response to applicants' amendments. A new rejection is made as set forth in this Office Action. Claims (7-12) are pending in the application.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

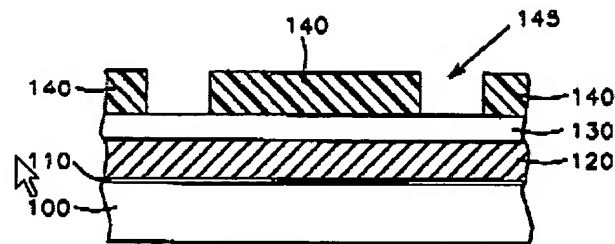
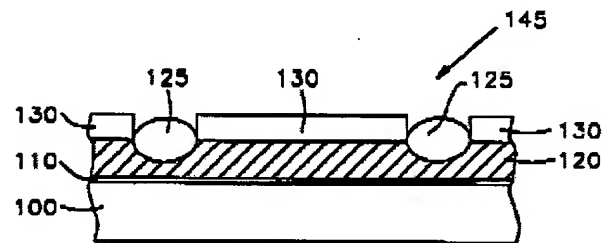
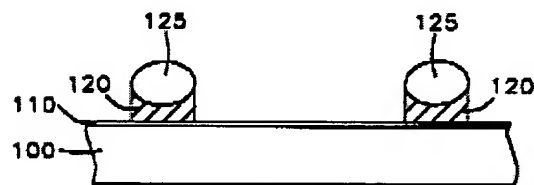
Claims 7, 8, and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Sung et al. (U.S. Pub. 2001/0026968).

In re claim 7, Sung discloses a method of manufacturing a code address memory cell in a peripheral circuit region and a flash memory cell in a cell region, the method comprising the steps of:

forming a device isolation film in a give region on a semiconductor substrate **100** to define an active region and a device isolation region; defining the active region into a cell region and a peripheral circuit region by a given process; forming a tunnel oxide film **110** and a first polysilicon film **120** on the entire circuit and then patterning the tunnel oxide film and the first polysilicon film so that the tunnel oxide film and the first polysilicon film remain in a give region of

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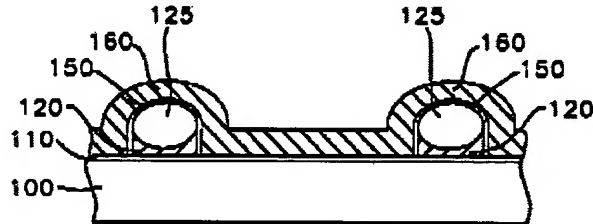
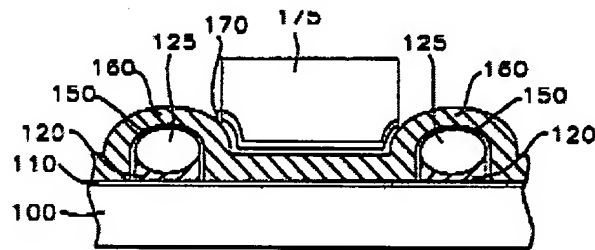
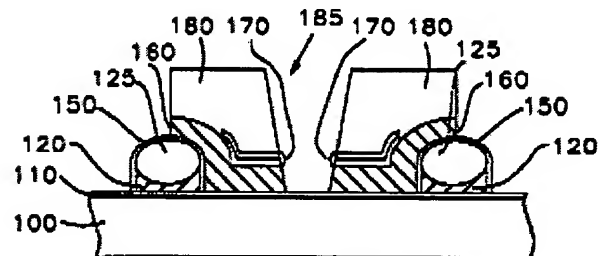
the cell region, thus defining a floating gate (pages 3-4, paragraphs [0035]-[0036] and FIGS. 2B-D);

*FIG. 2B**FIG. 2C**FIG. 2D*

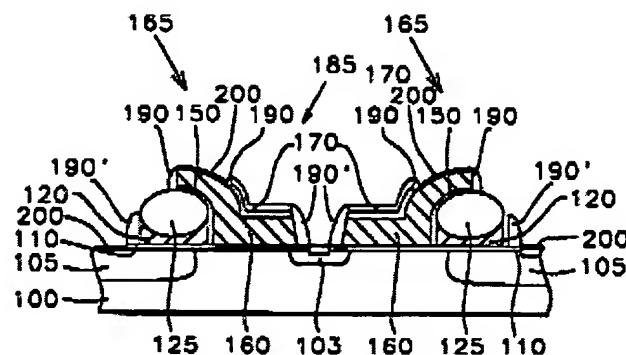
forming on the entire structure an insulating film 170 including an oxide film and a nitride film (page 4, paragraph [0039]) and forming a second polysilicon film 160 on the insulating film; patterning the second polysilicon film and the insulating film so that they remain in a given region of the cell region and the peripheral circuit region, thus forming a control gate on the insulating film covering the floating gate in the cell region and a gate on the insulating film

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covering a surface of the substrate in the peripheral circuit region (page 4, paragraphs [0038]-[0039] and FIGS. 2E-G); and

*FIG. 2E**FIG. 2F**FIG. 2G*

performing an impurity ion implantation process for a give region of the semiconductor substrate to form a source region 105 and a drain region 103, so that a flash memory cell is formed in the cell region, and a code address memory cell is formed in the peripheral circuit region (page 4, paragraph [0041] and FIG. 2H).

**FIG. 2H**

In re claims 8 and 10, Sung discloses that the insulating film 170 is formed by stacking at least two or more layers of at least one of the oxide and nitride film (page 4, paragraph [0039]).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sung et al. (U.S. Pub. 2001/0026968).

In re claim 9, Sung discloses that the insulating film 170 has a preferred thickness range about 1000 to 2000 Angstroms but does not explicitly teach or suggest the thickness range as disclosed in the Applicants' claimed invention.

However, there is no evidence indicating the thickness range of the insulating film is critical and it has been held that it is not inventive to discover the optimum or workable thickness range of a result-effective variable within

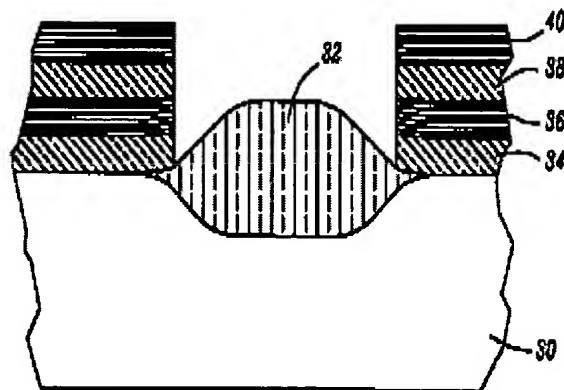
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given prior art conditions by routine experimentation. See MPEP § 2144.05.

Note that the specification contains no disclosure of either the critical nature of the claimed dimensions of any unexpected results arising there from. Where patentability is aid to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

In re claim 11, Ma et al. (U.S. Patent 5,981,403) provide evidence that the process of forming an insulating film by stacking a first oxide film, a first nitride film, a second oxide film and a second nitride film is well-known to one of ordinary skill in the art at the time of the invention was made. Ma et al. disclose an ONON structure includes a first oxide layer 34, a first nitride layer multilayer region 36, a second oxide layer 38 and a second nitride multilayer region 40 (col. 2, lines 12-16 and FIGS. 1-3).

**FIG. 2**



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***Allowable Subject Matter***

Claim 12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khiem D. Nguyen whose telephone number is (571) 272-1865. The examiner can normally be reached on Monday-Friday (8:00 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (571) 272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

K.N.  
March 3<sup>rd</sup>, 2005



W. DAVID COLEMAN  
PRIMARY EXAMINER